

CAITLIN E. HICKS PRIES
Assistant Professor of Biology

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EDUCATION

- Ph.D. (2012) Biology, University of Florida, Advisor: Dr. Edward A. G. Schuur
M.S. (2007) Soil and Water Science, University of Florida, Advisor: Dr. K. Ramesh Reddy
B.A. (2004) Biology and Environmental Studies (*summa cum laude*), Middlebury College
Workshops Radiocarbon in Ecology and Earth System Science, UC Irvine, 2009
Semester in Environmental Science, Woods Hole Marine Biological Lab, 2003

EMPLOYMENT EXPERIENCE

- 2017 Assistant Professor, Department of Biological Sciences, Dartmouth College
2013-2017 Postdoctoral Fellow, Research area: *Responses and mechanisms of soil carbon cycling to whole-profile in situ soil warming*, Advisor: Dr. Margaret Torn, Lawrence Berkeley National Laboratory
2007-2012 Doctoral Student, Dissertation title: *Effects of permafrost thaw and warming on carbon cycling in Alaskan tundra*, Advisor: Dr. Ted Schuur, University of Florida
2005-2007 Masters Student, Thesis title: *Carbon pools and sources in a constructed mangrove and seagrass habitat*, Advisor: Dr. K. Ramesh Reddy, University of Florida
2004-2005 Research Assistant, Research area: *Landscape ecology of urban ecosystems and river/savanna boundaries*, Advisors: Drs. Steward Pickett and Mary Cadenasso, Cary Institute of Ecosystem Studies
2004 Undergraduate Research, Project title: *Stochastic modeling of *Caretta caretta* populations in the Southeastern United States*, Advisor: Dr. Stephen Trombulak, Middlebury College
2003 Sea Turtle Intern, Monitoring sea turtle nesting and hatching, Bald Head Island Conservancy, Bald Head Island, NC
2002 REU Intern, Research area: *Marine benthic ecology*, Advisor: Dr. Les Watling, Darling Marine Center, University of Maine
2001 Research Assistant, Research area: *Pollination ecology*, Advisor: Dr. Helen Young, Middlebury College

TEACHING EXPERIENCE

- 2008-2011 Teaching Assistant, University of Florida
Taught laboratory sections of Introductory Biology and upper level Ecology, as head Ecology TA trained fellow TA's and helped redesign lab experiments
2009-2011 NSF GK-12 Fellow, University of Florida and Westwood Middle School, Gainesville, FL
Developed inquiry-based lessons and taught eighth grade Physical Science

- 2006 Teaching Assistant, Wetland Biogeochemistry, University of Florida
- 2004 Teaching Assistant, Ecology, Middlebury College
- 2003 Sea Turtle Intern, Bald Head Island Conservancy, Bald Head Island, NC
Taught children and the general public about sea turtle biology and coastal ecology

MENTORING EXPERIENCE

- 2013-2016 Science Undergraduate Laboratory Interns (3 students), Lawrence Berkeley National Laboratory
- 2009-2012 Senior Thesis (2) and Independent Project Advisor (1), University of Florida
- 2008-2011 Supervisor to Undergraduate Volunteers (10), University of Florida

GRANTS AND FELLOWSHIPS

- 2016 Advanced Research Projects Agency-Energy (ARPA-E), *Associated Particle Imaging (API) for Non-Invasive Determination of Carbon Distribution in Soil*, \$2.4 million for 3 years (Co-Investigator)
- 2014 Department of Energy, Office of Biological and Environmental Research, *Terrestrial Ecosystem Science Scientific Focus Area* at LBNL, \$3.3 million for 3 years (Contributor)
- 2011 University of Florida Graduate Student Research Abroad Program, *The effect of permafrost warming on arctic carbon balance*, \$9,995
- 2010 National Science Foundation Doctoral Dissertation Improvement Grant, *Carbon cycle changes in a changing climate: Using ¹³C and ¹⁴C to partition ecosystem respiration in tundra undergoing permafrost thaw*, \$14,941
- 2010 Denali National Park Murie Science and Learning Center Research Fellowship, *Carbon cycle changes in warming Alaska: Do plants or soil microbes drive changes in ecosystem respiration?*, \$4,580
- 2009 Science Partners in Inquiry-based Collaborative Education (SPICE) Fellowship, National Science Foundation GK-12 Program, \$33,000 total for stipend and tuition
- 2007 Alumni Graduate Fellowship, University of Florida, 2 years of \$18,000 total for stipend and tuition
- 2006 William K. Robertson Fellowship, University of Florida, Soil and Water Science Department, \$1,000

AWARDS

- 2012 Graduate Student Mentoring Award, University of Florida, \$500
- 2012 Terrestrial Ecosystem Science Meeting Student Travel Grant, U.S. DOE, \$1,000
- 2012 Departmental Service Award, University of Florida, Biology Department, \$150
- 2011 Abisko Scientific Research Station Scholarship, \$1,300
- 2008 Best Masters Thesis, University of Florida, College of Agriculture and Life Sciences, \$600
- 2007 Best Masters Thesis, University of Florida, Soil and Water Science Department, \$150
- 2007 Grinter Fellowship, University of Florida, \$6,000
- 2006 Honorable Mention, Student Poster Contest at the 3rd National Conference on Coastal and Estuarine Habitat Restoration

- 2006 Best Student Poster at the 7th Annual Soil and Water Science Department Research Forum, \$500
- 2004 Phi Beta Kappa, Beta Chapter of Vermont
- 2004 Elbert C. Cole '15 Prize for Outstanding Biology Student, Middlebury College, \$2,000
- 2000 Henry David Thoreau Scholarship for Environmental Studies, \$30,000
- 2000 Big Y Scholarship, \$2,000

PUBLICATIONS

Refereed Journal Articles

- Porras R.C., **Hicks Pries C.E.**, Torn M.S., Nico P.S. 2018. Synthetic iron (hydr)oxide-glucose associations in subsurface soil: Effects on decomposability of mineral associated carbon. *Science of the Total Environment* 613-614C, 342-351. DOI: 10.1016/j.scitotenv.2017.08.290
- Hicks Pries C.E.**, Bird J.A., Castanha C., Hatton P.J., Torn M.S. 2017. Long term decomposition: The influence of litter type and soil horizon on retention of plant carbon and nitrogen in soils. *Biogeochemistry* 134 (1-2), 5-16.
- Porras R.C., **Hicks Pries C.E.**, McFarlane K.J., Torn M.S. 2017. Association with pedogenic iron and aluminum: Effects on soil organic matter storage and stability in temperate forest soils. *Biogeochemistry* 133 (3), 333-345.
- Hicks Pries C.E.**, Castanha C., Porras R.C., Torn M.S. 2017. The whole-soil carbon flux in response to warming. *Science* 355 (6332), 1420-1423. doi: 10.1126/science.aal1319
- Hicks Pries, CE**, EAG Schuur, SM Natali, KG Crummer. 2016. Old soil carbon losses increase with ecosystem respiration in experimentally thawed tundra. *Nature Climate Change* doi:10.1038/nclimate2830
- Hicks Pries, CE**, RSP Logtestijn, EAG Schuur, SM Natali, JHC Cornelissen, R Aerts, E Dorrepaal. 2015. Decadal warming causes a consistent and persistent shift from heterotrophic to autotrophic respiration in contrasting permafrost ecosystems. *Global Change Biology* 21 (12), 4508-4519 doi: 10.1111/gcb.13032
- Torn, MS, A Chabbi, P Crill, PJ Hanson, IA Janssens, Y Luo, **CH Pries**, C Rumpel, MWI Schmidt , J Six, M Schrumpf, and B Zhu. 2015. A call for international soil experiment networks for studying, predicting, and managing global change impacts. *SOIL* 1, 575-582 doi:10.5194/soil-1-575-2015
- Natali, S.M., E.A.G. Schuur, E. E. Webb, **C.E. Hicks Pries**, K.G. Crummer. 2014. Permafrost degradation stimulates carbon loss from experimentally warmed tundra. *Ecology* 95 (3) <http://dx.doi.org/10.1890/13-0602.1>.
- Hicks Pries, C.E.**, E.A.G. Schuur, J.G. Vogel, S.M. Natali. 2013. Moisture drives surface decomposition in thawing tundra. *Journal of Geophysical Research-Biogeosciences*, doi: 10.1002/jgrg.20089.
- Hicks Pries, C.E.**, Schuur E.A.G., Crummer K.G. 2013. Thawing permafrost increases old soil and autotrophic respiration in tundra: Partitioning ecosystem respiration using $\delta^{13}\text{C}$ and $\Delta^{14}\text{C}$. *Global Change Biology* 19 (2) doi: 10.1111/gcb.12058.
- Hicks Pries, C.E.**, E.A.G. Schuur, and K. G. Crummer. 2012. Holocene Carbon Stocks and Carbon Accumulation Rates Altered in Soils Undergoing Permafrost Thaw. *Ecosystems* 12 (1): 162-173.
- Hicks Pries, C.E.** and J. Hughes. 2012. Inquiring into familiar objects: An inquiry-based approach to introduce scientific vocabulary. *Science Activities* 49 (2): 64-69.

Hicks Pries, C.E. and J. Hughes. 2011. Powering the Future: A wind turbine design competition. *Science Scope* 35 (4): 24-30.

Natali, S. M., E.A.G. Schuur, C. Trucco, **C.E. Hicks Pries**, K. G. Crummer, and A.F. Baron Lopez. 2011. Effects of experimental warming of air, soil and permafrost on carbon balance in Alaskan tundra. *Global Change Biology* 17 (3): 1394-1407.

Non Refereed Articles and Book Chapters

Schuur E.A.G., Carbone M.S., **Hicks Pries C.E.**, Hopkins F., Natali S.M. 2016. Radiocarbon in terrestrial systems *in* Radiocarbon in Ecology and Earth System Science. Schuur E.A.G. and S. Trumbore, editors.

Trumbore, S., Sierra C.A., **Hicks Pries C.E.** 2016. Radiocarbon nomenclature, theory, models, and interpretation: Measuring age, tracing source pools, and determining cycling rates *in* Radiocarbon in Ecology and Earth System Science. Schuur E.A.G. and S. Trumbore, editors.

E. Pegoraro and **C.E. Hicks Pries**. 2013. Decay in the Alaskan tundra: the effects of initial litter quality and leaching on long-term plant decomposition. *Journal of Undergraduate Research* 14(2). To access: <http://ufdc.ufl.edu/UF00091523/00657>.

Mason C.M., **C.E. Hicks Pries**, and E. A. G. Schuur. 2010. Seasonal differences in nutrient allocation of arctic tundra vegetation. *University of Florida Journal of Undergraduate Research* 11(2). To access: <http://www.clas.ufl.edu/jur/201007/index.html>.

Mayor J.R. and **C.E. Hicks**. 2009. Potential impacts of elevated CO₂ on plant interactions, sustained growth, and C cycling in salt marsh ecosystems *in* Human Impacts on Salt Marshes: A Global Perspective. Silliman B.R., M.D. Bertness, and E.D. Grosholz, editors.

Manuscripts in review or advanced preparation

Castanha, C., Zhu B., **Hicks Pries C.E.**, Torn M.S. Compensatory effects of heating, rhizosphere, and depth on soil moisture mediate decomposition of root litter in a Mediterranean grassland ecosystem (*in review*)

INVITED SEMINARS

Hicks Pries, C. 2017. Digging Deeper: The Vulnerability of Soil Organic Carbon to Climate Change. Ecosystem Science Seminar, University of California Merced.

Hicks Pries, C. 2014. How does litter become soil organic matter? Tracing the fate of needle- and root-derived soil organic matter through 10 years of decomposition. Soil Science Seminar, University of Zurich, Switzerland.

Hicks Pries, C. 2014. Terrestrial ecosystem carbon feedbacks in a warming world: Experiments in an Alaskan tundra and a California coniferous forest. Biology Department Seminar, Middlebury College, Vermont.

Hicks Pries, C. 2011. Beneath our feet: Soil carbon and ice dynamics and the future of our climate. Murie Science and Learning Center, Denali National Park, AK.

Hicks, C. 2007. Coastal ecosystems as carbon sinks: A case study from the Indian River Lagoon. Wetlands Seminar Series, University of Florida.

CONTRIBUTED PRESENTATIONS (RECENT)

Hicks Pries CE, Porras RC, Castanha C, Sulman B, Zhu B, Bird JA, Torn MS. How soil depth affects decomposition (*poster and invited talk*). 2017. Department of Energy Environmental Systems Science PI Meeting, Potomac, Maryland.

- Hicks Pries CE**, Castanha C, Porras RC, Torn MS. Differential root decomposition across soil depths (*poster*). 2016. American Geophysical Union Fall Meeting, San Francisco, California.
- Hicks Pries CE**, Castanha C, Porras RC, Torn MS. Soil depth responses to in situ warming (*poster*). 2016. Department of Energy Environmental Systems Science PI Meeting, Potomac, Maryland.
- Hicks Pries CE**, Castanha C, Porras RC, Torn MS. Invariant temperature sensitivity of soil respiration with depth (*poster*). 2015. American Geophysical Union Fall Meeting, San Francisco, California.
- Castanha, C., B. Zhu, **C. Hicks Pries**, K. Georgiou, M. Torn. 2015. Soil Warming and Rhizosphere Effects on Root Litter Decomposition at Two Depths in a Mediterranean Grassland Ecosystem (*oral*). American Geophysical Union Fall Meeting, San Francisco, California.
- C. Hicks Pries**, C. Castanha, R. Porras, B. Zhu, and M. S. Torn. 2015. Responses of soil organic carbon to experimentally warming the whole soil profile *in situ*. (*oral*). SubSOM Symposium, Raesfeld, Germany.
- C. Hicks Pries**, B. Zhu, C. Castanha, R. Porras, J. B. Curtis, and M. S. Torn. 2014. Deep soil carbon and its vulnerability to climate change. (*oral*). American Geophysical Union Fall Meeting, San Francisco, California.
- C. Hicks Pries**, B. Zhu, C. Castanha, R. Porras, C. West, J. B. Curtis, and M. S. Torn. 2014. Whole-profile soil carbon responses to warming and root carbon inputs in a coniferous forest. (*poster*). American Geophysical Union Fall Meeting, San Francisco, California.
- C. Hicks Pries**, B. Zhu, J. B. Curtis, C. Castanha, R. Porras, D. Herman, and M. S. Torn. 2014. The effects of whole profile soil warming on decomposition of native soil carbon and ¹³C-labeled root inputs. (*poster*). Department of Energy TES/SBR Joint Investigators' Meeting, Potomac, Maryland.
- C. Hicks Pries**, P.J. Hatton, C. Castanha, J.A. Bird, and M.S. Torn. 2014. How does litter become soil organic matter? Tracing the fate of needle- and root-derived soil organic matter through 10 years of decomposition. (*oral*). European Geosciences Union General Assembly, Vienna, Austria.
- M. S. Torn, **C. Hicks Pries**, B. Zhu, E. Brodie, J. Jansson, P. S. Nico, D. Herman, J.B. Curtis, C. Castanha, Y. Zhang. 2014. Understanding the response of soil organic carbon to warming throughout the whole soil profile. (*poster*). European Geosciences Union General Assembly, Vienna, Austria.
- C. Hicks Pries**, E. Dorrepaal, R. van Logtestijn, E. A. Schuur, H. Cornelissen. 2013. Declines In Old Soil Carbon Losses After 11 Years of Experimental Warming in a Subarctic Peatland (*oral*). American Geophysical Union Fall Meeting, San Francisco, California.
- C. Hicks Pries**, P. Hatton, C. Castanha, J. A. Bird, M. S. Torn. 2013. Where Is Needle- and Root-Derived Soil Organic Matter After 10 Years of Decomposition in a Temperate Forest? (*poster*). American Geophysical Union Fall Meeting, San Francisco, California.
- M. S. Torn, **C. Hicks Pries**, B. Zhu, C. Castanha, J. B. Curtis, E. Brodie, J. Jansson, P. S. Nico. 2013. Digging Deeper: controls and response of decomposition in the full soil profile. (*oral*). American Geophysical Union Fall Meeting, San Francisco, California.
- B. Zhu, **C. Hicks Pries**, J. Jansson, E. Brodie, P. S. Nico, D. Herman, J. B. Curtis, C. Castanha, Y. Zhang, M. S. Torn. 2013. The vulnerability of whole-profile soil organic carbon to in situ warming and root carbon inputs (*poster*). American Geophysical Union Fall Meeting, San Francisco, California.
- C.E. Hicks Pries**, M.S. Torn. 2013. Put down that ANOVA! Using regression-based experimental designs to deal with spatial heterogeneity (*oral*). 98th Annual Meeting of Ecological Society of America, Minneapolis, Minnesota.

C.E. Hicks Pries, M.S. Torn, J.A. Bird, and Pierre-Joseph Hatton. 2013. Tracing the fate of needle and fine root litter over 10 years in a coniferous forest soil (*poster*). 98th Annual Meeting of Ecological Society of America, Minneapolis, Minnesota.

C.E. Hicks Pries, B. Zhu, J. Jansson, E. Brodie, P. Nico, D. Herman, J.B. Curtis, C. Castanha, and M.S. Torn. 2013. The vulnerability of subsurface soil organic carbon to in situ warming and altered root carbon inputs (*poster*). Department of Energy TES/SBR Joint Investigators' Meeting, Washington, D.C.

SERVICE

Professional

- 2016 Scientific advisory board member, SPRUCE (Spruce and peatland responses under climatic and environmental change)
- 2013, 2016 AGU session organizer, Biogeosciences section
- Ongoing Reviewer (*Nature Climate Change, Global Change Biology, Ecology, Biogeosciences, JGR-Biogeosciences; Environmental Research Letters, etc.*)
- 2013, 2015 DOE Belowground Carbon Cycling Review Panel
- 2013, 2015 Ad-hoc reviewer for NSF Office of Polar Programs and DEB
- 2013 Organizer of "Mysteries of the Deep" soil carbon cycling workshop, Lawrence Berkeley National Laboratory

Departmental

- 2011-2012 Oversaw undergraduate research assistantship program, Department of Biology, University of Florida
- 2011-2012 Graduate committee representative, Department of Biology, University of Florida
- 2010-2011 Seminar committee representative, Department of Biology, University of Florida
- 2009-2010 Secretary, Biology Graduate Student Association, University of Florida
- 2008-2009 Student/Faculty Liaison, Botany Graduate Student Association, University of Florida

Community

- 2016 "Be A Scientist" project mentor to 7th grade students, Berkeley, CA
- 2016 BASIS (Bay Area Scientists in Schools) Volunteer, Berkeley and Oakland, CA
- 2006-2013 Alumni Interviewer, Middlebury College Admissions
- 2009-2012 Science Fair Judge, Alachua County School District, Florida

PROFESSIONAL SOCIETY MEMBERSHIPS

- 2009-Present American Geophysical Union
- 2007-Present Ecological Society of America